DIOPHANTINE ANALYSIS.

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108. Proposed by L. E. DICKSON. Ph. D., The University of Chicago.

The determinant $\triangle$ of the special group-matrix for the Quaternion Group equals $\sigma_1 \sigma_2 \sigma_3 \sigma_4 (x_1 - x_2)^4$, where $\sigma_1 = x_1 + x_2 + 2x_3 + 2x_5 + 2x_7$, $\sigma_2 = x_1 + x_2 + 2x_3 - 2x_5 - 2x_7$, $\sigma_3 = x_1 + x_2 - 2x_3 + 2x_5 - 2x_7$, $\sigma_4 = x_1 + x_2 - 2x_3 - 2x_5 + 2x_7$. Find the order of the linear group for the $GF[p^n]$, namely, the number of sets x_1, x_2, x_3, x_5, x_7, for which $\triangle$ is not equal to 0.

AVERAGE AND PROBABILITY.

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133. Proposed by L. C. WALKER, A. M., Graduate Student, Leland Stanford University. Cal.

A circle of unknown radius is drawn with its center at the vertex of a given parabola, and has its greatest area when its circumference passes through the focus of the parabola. Required the average area common to the circle and parabola.

134. Proposed by G. B. M. ZERR, A. M., Ph. D.. Professor of Chemistry and Physics, The Temple College, Philadelphia, Pa.

An ellipse, semi-axes a, b, is placed on a square, side c. Find the chance that center of ellipse is on the square.

MISCELLANEOUS.

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130. Proposed by F. P. MATZ, Sc. D., Ph. D.. Professor of Mathematics and Astronomy in Defiance College, Defiance. Ohio.

From a cloud of angular elevation $\phi = 45°$, a streak of lightning darted to the earth. The temperature of the atmosphere was $t = 80°$, and the percentage of humidity $p = 90$. After $m = 3$ seconds, the report of the stroke at the earth was heard. How far away from the observer did the streak of lightning (1) start, and (2) strike the earth?

NOTES.

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With this number of the MONTHLY begins a new arrangement for its future management which, we hope, will be as thoroughly appreciated by our readers as it is gratifying to us, and which, we are confident, will bring to it increased power and usefulness.

While in Chicago the first of September, we called on Dr. Dickson and urged him to join us in the editorship of the MONTHLY. Not seeing his way clear at the time, he withheld his answer until he could consider the matter. After some meditation, he decided affirmatively.

We feel that we are especially fortunate in securing the coöperation of so valuable a man as Dr. Dickson. He stands in the very front of the younger generation of mathematicians. Though not yet thirty years old, his contributions to mathematics in the way of original and important articles published in the various mathematical and scientific journals of the world is truly marvelous—

the most of his contributions being on the Theory of Groups. He is also the author of a *College Algebra* published by John Wiley & Sons; an *Introduction to Algebraic Equations* now being published by the same publishers, and a work on *Linear Groups,* published by B. G. Teubner, of Leipzig, Germany.

He is also on the editorial staff of the *Transactions* of the American Mathematical Society.

In 1896, Dr. Dickson took his doctor's degree at the University of Chicago; he then spent a year in study in Europe, one semester at Leipzig, and one semester at Paris. Returning to America, he became Instructor and later Assistant Professor of Mathematics in the University of California; then for one year Associate Professor of Mathematics in the University of Texas; and in 1900 he was called to the University of Chicago as Assistant Professor of Mathematics.

While Dr. Dickson has devoted the most of his time to research work and thereby materially aiding in enlarging the domain of mathematics, yet he is conscious of the importance of devoting time to the improvement of elementary texts, and thus placing the fundamentals of mathematics on a firm foundation. To this end he prepared his works on Algebra.

He thus brings to his work in the co-editorship of the MONTHLY a thorough and comprehensive knowledge of elementary as well as of higher mathematics. He will have full charge of the editing of all papers intended for publication in the MONTHLY. Therefore, we ask our contributors to send all articles for publication directly to him. His address is Box 142, Faculty Exchange, The University of Chicago.

All problems and solutions as well as all business communications pertaining to the MONTHLY should be sent, as heretofore, to B. F. Finkel, Springfield, Mo.

We hope that all our readers and contributors will coöperate with the editors in every way possible to make the MONTHLY a greater power for good than ever.   B. F. F.

The hundredth anniversary of the birth of Abel, the eminent Norwegian mathematician, was celebrated during September at Christiania. Representative scientists from many countries were present. Among those upon whom honorary degrees were conferred were Simon Newcomb and J. Willard Gibbs.   L. E. D.

Prof. J. M. Colaw, formerly associate editor of the MONTHLY, is coöperation with Prof. J. K. Ellwood, is now busily engaged in preparing for publication a text-book of Algebra. We are glad to note that the series of Arithmetics prepared by these gentlemen is meeting with wonderful success.   B. F. F.

The recent address by John Purser, President of Section A of the British Association was an "Historical Sketch of the Irish School of Mathematics and Physics." It dealt at length on the life of Sir W. R. Hamilton.   L. E. D.

Mr. J. W. Miller, Ph. D. (Columbia) has been appointed Instructor in Mathematics and Astronomy in Lehigh University.   L. E. D.